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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/936,365	09/13/2001	Reiko Yamada	57454-235	3605

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EXAMINER	
JACKSON, JAKIEDA R	

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 01/23/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/936,365	YAMADA ET AL.	
	Examiner	Art Unit	
	Jakieda R. Jackson	2655	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on November 14, 2005 has been entered.

Response to Amendment

2. In response to the Office Action mailed June 14, 2005, applicant submitted an amendment filed on November 14, 2005, in which the applicant amended and requested reconsideration with respect to **claims 1, 4, 11, 15 and 22**.

Response to Arguments

3. Applicant's argue that Shapiro et al. does not disclose that the reference audio specimens include an array of phonemes and word boundaries of the sentence uttered by the learner. Shapiro et al. analyzes a sentence uttered by a learner to identify the silence speech boundaries and then to identify consonant-vowel boundaries without using the reference audio specimens. In contrast, the claimed invention is configured to separate a sentence uttered by a learner into word speech information based on the "model phoneme array information including an array of phonemes and word boundaries of the sentence," as amended. Applicant's arguments, see remarks, filed

November 14, 2005, with respect to the rejection(s) of claim(s) 1-22 under 102(b) have been fully considered and are persuasive. However, upon further consideration, a new ground(s) of rejection is made in view of Bruckert. Bruckert teaches that a phoneme array has entries which correspond to phonemes of the language being synthesized, and also has entries giving boundaries of syllables, and entries giving boundaries of words which are being synthetically spoken (column 4, lines 60-63).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. **Claims 1-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Shpiro et al. (U.S. Patent No. 5,487,671), hereinafter referenced as Shpiro in view of Bruckert (USPN 6,029,131).

Regarding **claims 1, 4, 15 and 22**, Shpiro discloses a foreign language learning device (figure 2, element 210), method, computer-readable medium and computer program (column 1, lines 57-62), hereinafter referenced as a foreign language learning device, comprising:

word separation means (figure 3, element 260) for receiving sentence speech information (phonetic unit), the sentence speech information corresponding to speech produced successively by a learner (student) when the learner utters a sentence (student's utterance; column 7, lines 5-15) including a plurality of words (multiplicity of words; column 5, lines 36-40), to separate said sentence speech information (phrases; column 5, lines 33-41) into word speech information on the basis of each word included in said sentence (column 7, lines 5-15) using model phoneme array (column 5, lines 33-41);

likelihood determination means (figure 1, element 40 with figure 2, element 280) for evaluating degree of matching (similarity) of each said word speech information with a model speech (figure 1 with column 5, lines 10-16 and column 7, lines 43-48); and

display output means (figure 1,element 30) for displaying, for each said word, a resultant evaluation (figure 1, element 40) determined by said likelihood determination means (figure 1 with column 5, lines 10-27), but does not specifically teach that the word separation means include an array of phonemes and word boundaries of the sentence.

Bruckert teaches a word separation means (column 10, lines 57-63) to separate said sentence speech information into word speech information on the basis of each word included in said sentence using model phoneme array information including an array of phonemes and word boundaries of the sentence (column 4, lines 60-63, column 5, lines 25-55, column 6, lines 1-5 and column 7, lines 1-16), in order to produce a desired synthetic spoken pattern.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Shpiro's device, to include an array of phonemes and word boundaries of the sentence, as taught by Bruckert, so that the time duration of a sequence of phonemes can be adjusted to a desired value (column 1, lines 40-42), in order to produce a desired synthetic spoken pattern (column 1, lines 5-7).

Regarding **claims 2, 5, and 16**, Shpiro discloses the foreign language learning device further comprising storage means (figure 2, element 120) for storing a model sentence to be pronounced by said learner (prerecorded speech models) and model phoneme array information which corresponds to said model sentence (multiplicity of phonemes) and concerns the whole of said model sentence (column 5, lines 33-41 with column 8, lines 2-7), wherein

said display output means (figure 1, element 30) presents said model sentence to said learner in advance (figure 5A), and

said word separation means (figure 3, element 270) includes

phoneme recognition means (reference audio for phonemes) for recognizing said sentence speech information (words/phrases) on the basis of each phoneme information (column 5, lines 33-41 with column 7, lines 5-15 and column 7, line 65 – column 8, line 7), and

word speech recognition means for recognizing said word speech information (response specimen) for each said word according to said phoneme information (phonetic unit/phoneme) and said model phoneme array information after the

separation (column 5, lines 33-41 with column 7, lines 5-15 and column 7, line 65 – column 8, line 7).

Regarding **claims 3, 6 and 17**, Shpiro discloses the foreign language learning device wherein

said phoneme recognition means (figure 1) includes phoneme likelihood determination means (figure 1, element 40 with figure 3, element 280) for determining likelihood of each phoneme information (most similarity) in said sentence speech information (student's response), with respect to each of phonemes that can be included in said foreign language (British/American dialect; column 7, line 34 – column 8, line 14), and

said likelihood determination means (figure 3, element 280) evaluates the degree of matching of each said word speech information (evaluating the student responses; column 7, lines 33-41) by comparing, on a likelihood distribution plane of phoneme information (figure 1 with column 5, lines 10-16 and lines 23-27 with column 7, lines 33-48) in said sentence speech information (figure 2, element 520 with column 9, lines 2-3), each word likelihood determined along a path followed when pronunciation follows a phoneme array exactly the same as said model phoneme array information (column 5, lines 33-41 and lines 57-65 with column 8, lines 6-14) with the sum of word likelihoods (figure 5B, element 530) determined along mistakenly utterable candidate paths from a speech waveform of pronunciation by the learner (graphic representations of the waveforms; figures 6-11).

Regarding **claims 7 and 18**, Shpiro discloses the foreign language learning device further comprising the step of evaluating a resultant pronunciation by said learner after practice of the pronunciation (audio specimen to be practiced; column 8, lines 40-45), said evaluation (evaluating) made on the basis of each said phoneme and said word in said model sentence uttered (student's responses) by said learner (column 7, lines 34-48).

Regarding **claims 8, 12 and 19**, Shpiro discloses the foreign language learning method wherein

said step of evaluating a resultant pronunciation after practice thereof includes the step of displaying a vocal tract shape model (graphic representation of the waveform) for each said phoneme via a display unit to said learner (figure 1, element 30 with figures 6-11).

Regarding **claims 9, 13 and 20**, Shpiro discloses the foreign language learning device wherein

said step of evaluating a resultant pronunciation after practice thereof includes the step of displaying, via a display unit (figure 1, element 30) to said learner, a model voice print (figure 1, element 32) and a voice print concerning pronunciation by said learner (figure 1, element 34), said voice prints being compared with each other to be displayed (figure 1 with column 5, lines 10-16 and column 9, lines 24-35).

Regarding **claims 10, 14 and 21**, Shpiro discloses the foreign language learning method wherein

said step of evaluating a resultant pronunciation after practice (figure 1, element 40) thereof includes the step of displaying, via a display unit (figure 1, element 30) to said learner, position of pronunciation by said learner on a formant plane (figure 1 with column 5, lines 61-65 and column 8, lines 2-7).

Regarding **claim 11**, Shpiro discloses a foreign language learning device comprising:

storage means (figure 2, element 120) for storing a model sentence to be pronounced by a learner (prerecorded speech models) and model phoneme array information corresponding to said model sentence (multiplicity of phonemes; column 5, lines 33-41 with column 8, lines 2-7);

display output means (figure 1, element 30) for presenting said model sentence to said learner in advance (figure 5A);

word separation means (figure 3, element 260) for receiving sentence speech information (phonetic unit) corresponding to a sentence pronounced by said learner (student; column 7, lines 5-15) to separate the sentence speech information (phrases; column 5, lines 33-41) into word speech information on the basis of each word included in said sentence (column 7, lines 5-15);

likelihood determination means (figure 1, element 40 with figure 2, element 280) for evaluating degree of matching (similarity) of each said word speech information with a model speech (figure 1 with column 5, lines 10-16 and column 7, lines 43-48) on a likelihood distribution plane (column 5, lines 10-16 and lines 23-27 with lines 33-48); and

display output means (figure 1, element 30) for displaying, for each phoneme and each said word, a resultant evaluation (figure 1, element 40) by said likelihood determination means (figure 1 with column 5, lines 10-27),

said word separation means (figure 3, element 270) including

phoneme recognition means (reference audio for phonemes) for recognizing said sentence speech information (word/ phrases) on the basis of each phoneme information (column 5, lines 33-41 with column 7, lines 5-15 and column 7, line 65 – column 8, line 7), and

word speech recognition means for recognizing said word speech information (response specimen) for each said word according to said phoneme information (phonetic unit/phoneme) and said model phoneme array information after the separation (column 7, lines 5-15 and column 7, line 65 – column 8, line 7), and

said foreign language learning device further comprising pronunciation evaluation means for evaluating a resultant pronunciation after practice of the pronunciation (audio specimen to be practices; column 8, lines 40-45) for each said phoneme and for each said word in said model sentence uttered (student's responses) by said learner in a pronunciation practice period (column 7, lines 34-48), but does not specifically teach that the word separation means include an array of phonemes and word boundaries of the sentence.

Bruckert teaches a word separation means (column 10, lines 57-63) to separate said sentence speech information into word speech information on the basis of each word included in said sentence using model phoneme array information including an

array of phonemes and word boundaries of the sentence (column 4, lines 60-63, column 5, lines 25-55, column 6, lines 1-5 and column 7, lines 1-16), in order to produce a desired synthetic spoken pattern.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Shpiro's device, to include an array of phonemes and word boundaries of the sentence, as taught by Bruckert, so that the time duration of a sequence of phonemes can be adjusted to a desired value (column 1, lines 40-42), in order to produce a desired synthetic spoken pattern (column 1, lines 5-7).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jakieda R. Jackson whose telephone number is 571.272.7619. The examiner can normally be reached on Monday through Friday from 7:30 a.m. to 5:00p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571.272.7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JRJ
January 19, 2006

WAYNE YOUNG
SUPERVISORY PATENT EXAMINER